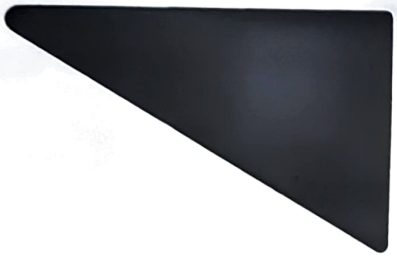
NORTEL NORSTAR

3X8 DR5.1
Installer Guide



3X8 DR5.1
Installer Guide

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Regulations

Safety and installation

The shock hazard symbol within an equilateral triangle is intended to alert personnel to electrical shock hazard or equipment damage.

The following precautions should also be observed when installing telephone equipment.

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

This symbol (if applicable) on the product is used to identify the following important information:

For equipment with internal power supplies

- Mains nominal AC voltage 110-120 V~; 60Hz
- Mains nominal AC voltage 220-240 V~; 50Hz

For equipment with external power supplies
Intended for use in a protected environment. Use only a Nortel supplied or recommended mains power adapter marked as indicated below:

	Mains supply (input voltage)	
	230 - 240 V ac	110 V ac
Output voltage	12 V ac	12 V ac
Rated current	0.8 a maximum	0.8 a maximum
Approval markings	Class II Power supply	Class 2 Power supply
Polarity marking	Not applicable	Not applicable

The CE marking on the product indicates compliance with the EU Low Volta ge Directive (LVD) and the Electromagnetic Compatibility Directive (EMCD).

For current ratings, refer to product specific documentation and product labels.

Important safety instructions

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury of persons, including the following:

- Follow the warnings and instructions marked on the product.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use this product near water, for example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement or near a swimming pool.

- Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
- This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
- Never spill liquid of any kind on the product.
- To reduce the risk of electric shock, do not disassemble this product, but have it sent to a qualified service person when service or repair work is required.
- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

  a. When the power supply cord or plug is damaged or frayed.

  b. If the product has been exposed to rain, water or liquid has been spilled on the product, disconnect and allow the product to dry out to see if still operates; but do not open up the product.

  c. If the product housing has been damaged.

  d. If the product exhibits a distinct change in performance.
- Avoid using telephone equipment during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone equipment to report a gas leak in the vicinity of the leak.
- To eliminate the possibility of accidental damage to cords, plugs, jacks, and the telephone equipment, do not use sharp instruments during the assembly procedures.
- Do not insert the plug at the free end of the handset cord directly into a wall or baseboard jack. Such misuse can result in unsafe sound levels or possible damage to the handset.
- Disconnect telecommunications lines before unplugging main power cord.
- Save these instructions

Canadian regulations

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier.

Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations as specified in the Industry Canada Standard ICES-003.

Substitution of non-approved equipment will void the Nortel warranty.

Address for warranty and repairs in Canada:
Nortel
30 Norelco Drive
Weston, Ontario
M9L 2X6

For more information call 1-800-4NORTEL.

US regulations

Federal Communication Commission (FCC) Notice Radio/TV interference
This equipment, has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Devices intended to be connected to the Public Switched Telephone Network

FCC Registration Number
This telephone equipment complies with Part 68, FCC Rules for direct connection to the Public Switched Telephone Network (The FCC registration number appears on a label affixed to the KSU).

Your connection to the telephone line must comply with these FCC Rules:

- Use only an FCC Standard network interface jacks and FCC compliant line cord and plug to connect this equipment to the telephone line.
- If a network interface jack is not already installed in your location, you can order one from your telephone company. Order the following network jacks along with the corresponding Facility Interface Code (FIC):

Trunk Cartridge	REN	USOC	SOC	FIC
Loop Start/Disconnect Supervision (LS/DS) NT7B75GA-93	AC 1.5B DC 0.3	RJ21X	9.0F	02LS2
Call Information (CI)- NT5B41GA-93	AC 1.5B DC 0.3	RJ21X	9.0F	02LS2
1A2 - NT5B39GA-93	AC 1.5B DC 0.3	RJ21X	9.0F	02LS2

In some states, customers are permitted to install their own jacks.

- The equipment cannot be used with or connected to a party line or a public coin phone service provided by the telephone company. Connection to Party Line Service is subject to state tariffs. Contact the Public State Utility Commission, Public Service Commission or Corporation Commission for information.
- It is no longer necessary to notify the Telephone Company of your system's Registration and REN numbers. However, you must provide this information to the telephone company if they request it.

- If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it necessary.
- The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.
- Do not attempt to repair this equipment yourself. If trouble is experienced with this equipment, please refer to the repair and warranty information, noted below. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Ringer Equivalence Number

The FCC Registration information on the product label, includes a Ringer Equivalence Number (REN) which is used to determine the number of devices you may connect to your phone line. A high total REN may prevent a KSU from detecting ringing in response to an incoming call and may make placing calls difficult. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

Note: RENs are associated with loop start and ground start ports. Do not use for E&M or digital ports.

Signaling method

The equipment allows signaling in DTMF tones. It can complete calls to local and long distance lines and can also complete long distance calls via computer phone systems such as MCI or SPRINT. This equipment is capable of providing access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

Hearing aid compatibility
The telephone station sets are compatible with hearing aids equipped with an appropriate telecoil and is compliant with the requirements of the Americans with Disabilities Act (ADA).

Address for warranty and repairs in the US:
Nortel
640 Massman Drive
Nashville TN 37210

For more information call 1-800-4NORTEL

Use of a music source

In accordance with US, Canadian and international copyright laws, a license may be required from the American Society of Composers, Authors and Publishers, or other composers' or performing rights organization if Radio, TV or other broadcasts to the public are transmitted through the Music On Hold or Background Music features of this telecommunication system.

Programming emergency numbers

When programming emergency numbers and/or making test calls to emergency numbers:

1. Remain on the line and briefly explain to the dispatcher the reason for calling before hanging up.
2. Perform such activities in the off-peak hours, such as early mornings or late evenings.

Substitution of non-approved equipment will void the NORTEL warranty.

What's new with 3X8 DR5.1?

ATA Answer Timer

The Norstar system allows you to administer a delay between the last digit you dial on a device connected to an analog terminal adaptor (ATA) and when the KSU is ready to receive DTMF tone from the far end analog device. Up until now there was a fixed seven-second delay. Now you can shorten or lengthen the delay depending on the requirements of the device attached to the ATA. Facsimile machines and credit card sets, for example, require a three second delay.

Auxiliary Ringer

To resolve the problem of an auxiliary ringer indicating internally transferred calls, the Auxiliary ringer can be set by line and by telephone. The telephone setting when combined with the line setting allows you to chose if the Auxiliary Ringer (if installed) will ring when a call is sent to a specific telephone or on a specific line. For example, an incoming call on a line programmed to yes will ring the auxiliary ringer. Once the call is answered and transferred within the system, the auxiliary ringer will not ring for a call sent to a telephone that has auxiliary ringer set to no.

Do Not Disturb on Busy

When you are busy on a call and a second call comes in, your telephone rings softly to alert you to the second call. If you find this second ring distracting, you can have the system prevent a second call from disturbing you by assigning Do Not Disturb (DND) on Busy to your extension.

Last Number Redial

Up to now Last Number Redial was available for all telephones on a system wide basis. Now you can change the ability of a particular telephone to use Last Number Redial. This helps to ensure that only authorized users can view access codes or passwords.

Link Feature

You can change a telephone's ability to use Link (a host system signaling option).

Page Turn

Page Timeout

Saved Number Redial

Preparation

Equipment for mounting the KSU

- ☐ screwdriver, diagonal cutters, pliers, connecting tool, pencil, level (optional)
- ☐ two 5 mm (#10) wood screws, 1.5-2.0 cm (0.5-0.75 in.) long
- ☐ 19 mm (3/4 in.) thick wooden backboard (if necessary)

Internal wiring requirements

All new or existing wiring must meet the following specifications:

- ☐ one twisted pair per telephone
- ☐ a dc loop resistance less than 39 Ω
- ☐ cable length (0.5 mm or 24 AWG) not to exceed 183 m (600 ft.)
- ☐ use of a Norstar Station Auxiliary Power Supply (SAPS) to extend the loop up to 790 m (2600 ft.) if the cable is longer than 183 m (600 ft.)
- ☐ no bridge taps

Electrical requirements

- ☐ Non-switched outlet
- ☐ ac outlet located not more than 1.5 m (4.9 ft.) from the Key Service Unit (KSU)
- ☐ For 120V product: dedicated 110-120V ac, 50/60 Hz, 3-wire, 15-amps
- ☐ For 220V product: dedicated 220-240V ac, 50/60 Hz, 3-wire, 15-amps

Warning

The ac outlet must be equipped with a third wire ground to avoid electromagnetic interference.

Norstar as an OPX

Norstar can be used as an off-premise extension (OPX) from a PBX. In order to support this application, the OPX lines must be engineered not to exceed 8 dB total loop loss from the serving central office to the demarcation point at the Norstar KSU.

Installing the KSU

Avoid electrical shock hazard.

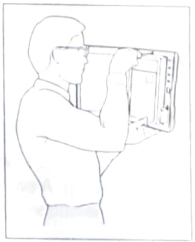
To avoid electrical shock hazard to personnel, or equipment damage, observe the following precautions when installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Note: Mount the KSU on a wood backboard with at least 10 cm (3.9 in.) of clearance on its left-hand side, and at least 5 cm (2 in.) of clearance on its right-hand side (viewed from the front of the KSU).

1. Unpack the KSU and inspect it for damage.
2. Before installing the KSU, open the KSU door 90°.
3. **Do not turn the power on to the KSU.**
4. Screw the top mounting screw half-way into the backboard.
5. Hang the KSU vertically on the top mounting screw (Figure 1).

Figure 1 — Mounting the KSU



6. Make sure the KSU is level (Figure 2).
7. Install the bottom screw. Tighten both screws.
8. Screw the power supply unit to the wood backboard or wall. Ensure that the power supply connector can reach the KSU.

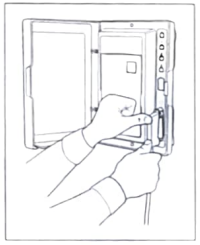
Figure 2 — Leveling the KSU

Internal wiring, power, and external lines

Connecting internal wiring

1. Plug the 25-pair cable into the KSU (Figure 3).
2. Route the cable to the distribution panel.
3. Connect the wires to the appropriate pins on the distribution block. (See Chart 2 — Internal Wiring.)

Figure 3 — Plugging in the 25-pair cable



4. Cross-connect the internal wires to the corresponding pins on the distribution block.
5. Connect the Norstar telephones to your internal wiring loop. A pair of wires is required for each internal telephone. (See Chart 2 — Internal Wiring.)

Connecting power

1. Plug the power supply connector into the KSU (Figure 4).

Figure 4— Plugging in the power supply connector

Power supply.

Use only the power supply and power supply connector provided for use with the 3X8 DR5.1 KSU. (Electrical rating 19V ⎓ 0.75A and 5V ⎓ 0.8A)

Connecting external lines

1. Cross-connect the external lines from the distribution panel directly to the modular jacks located on the right side of the KSU (Figure 5). Line 01 is connected to the top jack. (Each jack is identified with its line number.)
2. Route the line cords through the opening at the bottom right of the KSU.

Figure 5 — Connecting the external lines

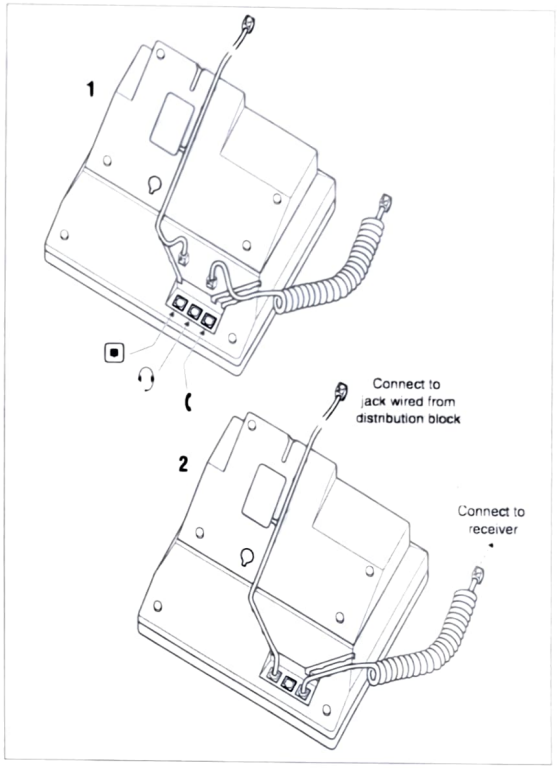
Internal wiring chart

Chart 2 — Internal Wiring

Pin	Wire color	Service	Telephones (Defaults)	Port
26	White-Blue	T	(21)	1
1	Blue-White	R		
27	White-Orange	T	(22)	2
2	Orange-White	R		
28	White-Green	T	(23)	3
3	Green-White	R		
29	White-Brown	T	(24)	4
4	Brown-White	R		
30	White-Slate	T	(25)	5
5	Slate-White	R		
31	Red-Blue	T	(26)	6
6	Blue-Red	R		
32	Red-Orange	T	(27)	7
7	Orange-Red	R		
33	Red-Green	T	(28)	8
8	Green-Red	R		
42	Yellow-Orange	Spare	—	—
17	Orange-Yellow	Spare	—	—
43	Yellow-Green	Spare	—	—
18	Green-Yellow	Spare	—	—
44	Yellow-Brown	Spare	—	—
19	Brown-Yellow	Spare	—	—
45	Yellow-Slate	Spare	—	—
20	Slate-Yellow	Spare	—	—
46	Violet-Blue	Spare	—	—
21	Blue-Violet	Spare	—	—
47	Violet-Orange	—	—	External Paging
22	Orange-Violet	—	—	(audio signal)
48	Violet-Green	N/O	—	External Paging
23	Green-Violet	Common	—	(relay contact)
49	Violet-Brown	N/O	—	Auxiliary Ringer
24	Brown-Violet	Common	—	(relay contact)
50	Violet-Slate	Music	—	External Music
25	Slate-Violet	Ground	—	(audio signal)

T and R are symbolic representations of the telephone connections and should not be confused with Tip & Ring. Telephone connections are non-polarized.

Installing Norstar telephones



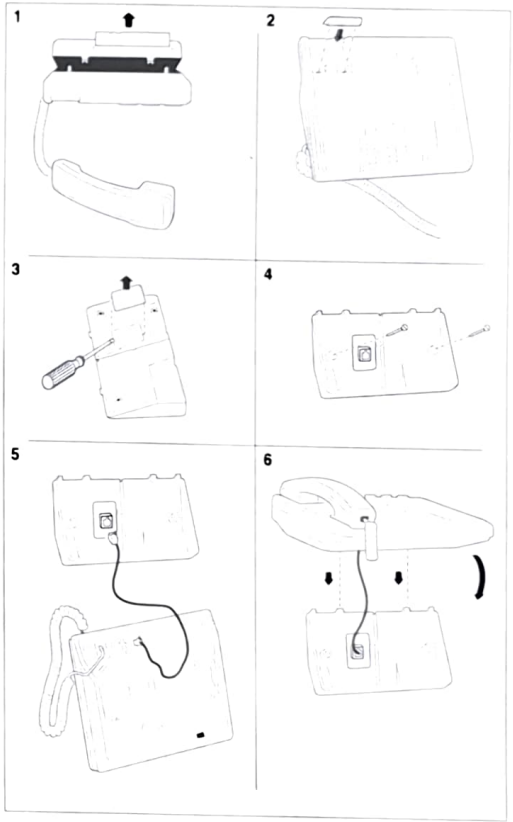
Norstar telephones cannot be used as off-premise extensions (OPX). For OPX applications, use the Norstar Analog Terminal Adapter (ATA) and a single-line telephone. See the *Norstar ATA Installation Card* for details.

Installing a wall-mounted telephone

1. Remove the beveled wall-mounting base from the back of the telephone. Grip the telephone, and with your thumbs, push on the wide edge of the base to pop it out from the telephone.
2. Remove the receiver clip from the wall-mounting base. Install the clip in the forward lip of the receiver rest.
3. Use a screwdriver or similar tool to remove the center knock-out panel in the wall-mounting base.
4. Screw the base to the wall (thin end up) so that the wall jack projects through the knock-out.
5. Connect one end of the line cord to the telephone line jack. Route the line cord through the appropriate cord guide in the bottom of the telephone.
6. Connect the other end of the line cord to the wall jack. Store any spare cord neatly in the base of the telephone and mount the telephone on the base.

Telephone power source.

If the telephone line is supported with auxiliary power, the power source must be a Class 2 power source that is UL listed and CSA certified.



Installing optional equipment

Note: Optional equipment must meet with local regulatory approval standards.

Auxiliary ringer (customer supplied)

The Norstar KSU provides a control contact to operate an external ringer. It does not provide ring current or dc voltage. The ringer relay contacts must not draw more than 50 mA from a 30 V dc source.

1. Follow the manufacturer's installation instructions.
2. Connect the Auxiliary Ringer generator to the 50-pin distribution block as shown in Chart 2 — Internal Wiring.

External music source (customer supplied)

This equipment provides music for the Music on Hold and Background Music features. These features must be enabled through Configuration (see "Programming" on page 25 for more information). Refer to the *3X8 DR5.1 Owner's Handbook* and the *3X8 DR5.1 Programming Record* for more information.

The music source can be any approved low-power output device (such as a radio) with a high-impedance earphone jack. The recommended KSU input level is 0.25 Vrms across an input impedance of 3300 Ω.

Audio input polarity.

To avoid damage to audio equipment, ensure that the polarity of the audio input is correct according to the KSU internal wiring chart.

1. Connect the music source and ground to the 50-pin distribution block as shown in Chart 2 — Internal Wiring.
2. Activate the Music on Hold or Background Music feature and adjust the volume at the music source to a comfortable level.

Note: Background Music volume can also be adjusted at each telephone.

External paging system (customer supplied)

The paging system uses the speakers on Norstar telephones and can also be used with external loudspeakers provided by the customer. The paging output from the Norstar KSU is 775-mVrms across an input impedance of 600 Ω.

1. Follow the manufacturer's installation instructions.
2. Connect the paging system audio input to the 50-pin distribution block as shown in Chart 2 — Internal Wiring.
3. Connect the paging relay (max. rating: 30 Vdc @ 50 mA) to the 50-pin distribution block as shown in Chart 2 — Internal Wiring.

Note: Norstar external paging does not support talk-back paging equipment unless an external line port is used.

Powering up the system

1. Power on the KSU by plugging in the power cord. The red power LED on the KSU should turn on.
2. If the red LED does not turn on, verify that there is power at the ac outlet.
3. If there is power at the ac outlet, verify that there is power at the dc end of the power supply.
4. If there is power at the dc end of the power supply, replace the KSU.

   OR

5. If there is no power at the dc end of the power supply, replace the power supply.

Close and lock the KSU door.

Close and lock the KSU door after installation is complete to avoid accidental shock and to provide containment in the event of fire.

Programming

Programming a newly installed Norstar system involves the completion of the following programming steps:

- System Startup
- Configuration
- General Administration

Programming overview

System Startup

System Startup is performed only when the system is first installed. System Startup allows you to select one of three programming templates: Square, Hybrid, or PBX. Each template initializes all of the programming data to system wide defaults.

Configuration

Allows programming of basic line and telephone characteristics.

Configuration access code: This code and the Installer password give access to

A. Configuration
B. General admin
C. Set copy
D. System Version

General Administration

Allows the customization of the system at installation and on an ongoing basis. (See the *3X8 DR5.1 Owner's Handbook* for details on Administration programming.)

Administration access code: This code gives access to `B. General admin`

Note: `B. General admin` is also accessible through the Configuration code. Administration has been given a unique code and optional password so that the person administering the system can be allowed access to Administration programming, while being denied access to all other programming headings.

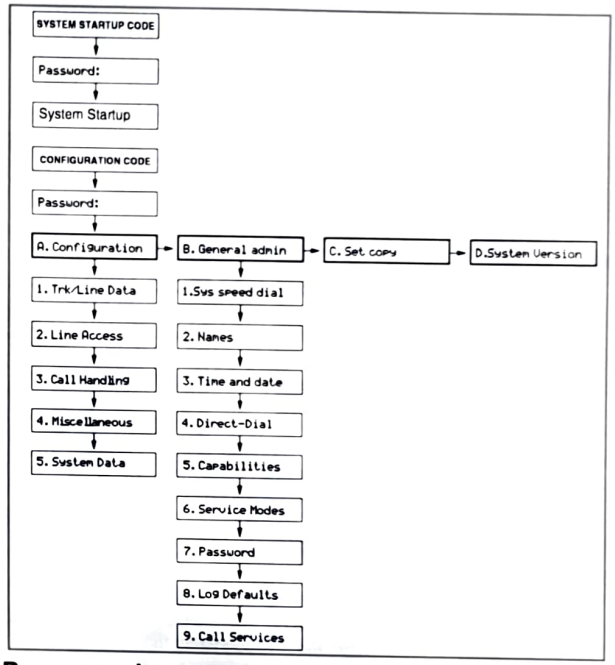
Set Copy

This feature is used to copy all of the system programming (Configuration and Administration) from one telephone to another. Personal programming on individual telephones can also be copied, but system-level programming will be copied along with it. Copy appears on the display as `C. Set copy` and is accessible through Configuration programming.

System Version

System Version allows you to note the version numbers of the software in the System Processor (SP) software, residing in the KSU. System Version appears on the display as `D. System Version` and is accessible through Configuration programming.

Chart 3 — Programming Overview



Programming tools

Norstar telephones

The Norstar M7100, M7208, M7310 and M7324 Telephones can be used with the 3X8 DR5.1 system. Programming is done with an M7208, M7310, or M7324 Telephone (Figure 6). The M7100 Telephone cannot be used for programming.

Figure 6 — Norstar Telephones used for programming

M7208 telephone	M7310 telephone	M7324 telephone

Programming Record

The *3X8 DR5.1 Programming Record* may already have been completed before installation. It describes the settings to be programmed into a Norstar system. Also, the *3X8 DR5.1 Programming Record* serves as a record of the settings programmed at initial installation and during subsequent customization of the system.

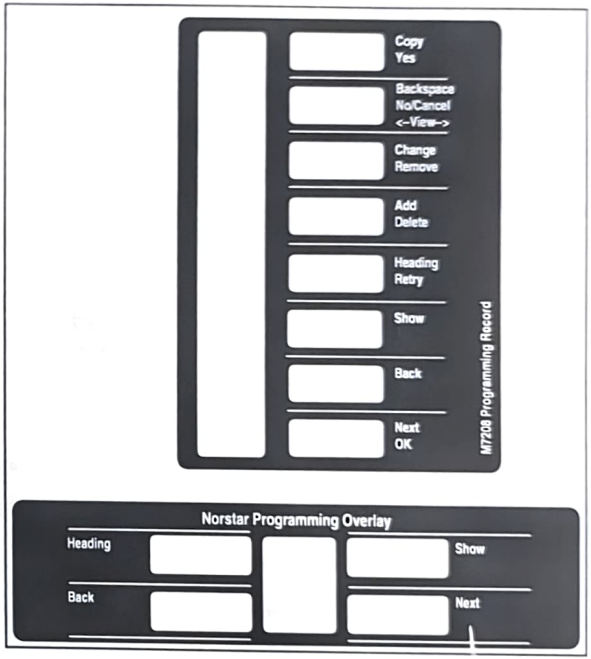
Default settings: Many of the programming settings are determined during System Startup according to the selected template. Any of these settings may later be changed during programming. In the *3X8 DR5.1 Programming Record*, these default settings are shown in bold characters for the Square template.

Programming Overlay

The Programming Overlay is placed over the buttons of the Norstar telephones, and provides an aid in recognizing the function of the buttons during programming. The Programming Overlay can be found at the end of this Guide.

The Programming Overlay for the M7208 Telephone is placed over all of the eight memory buttons (Figure 7). The Programming Overlay for the M7310 and M7324 Telephones (Figure 7) is placed over the top four memory buttons with indicators.

Figure 7 — Programming Overlay for the M7208 Telephone (top) and for the M7310 and M7324 Telephones (bottom)



System Startup

After the hardware has been installed and powered up, use Startup programming to initialize the system.

Startup erases programming.

Startup programming erases any existing programmed data, and resets the system to factory defaults.

All Configuration and Administration data will be retained for at least three days if the power fails or if the Norstar system is powered off. After three days without power, it may be necessary to perform System Startup again.

Note: Do **not** attempt Directory Number (DN) changes within two minutes of System Startup (using the Change DNs option of 5. System Data). Attempting a DN change may disable the ports.

System Startup access

The System Startup code and a password are used only during initial installation to access System Startup.

The correct Startup code must be entered no later than 15 minutes after the Norstar system has been powered up. A Startup code entered at any time after the 15 minute interval results in the message Startup denied. If this occurs, re-power the system again to prepare for the System Startup process.

Entering System Startup

Select a Norstar telephone from which to program. Place the correct Programming Overlay over the buttons of the telephone.

You must enter the Startup programming code no later than 15 minutes after the Norstar system has been powered up. (If 15 minutes have elapsed since you powered up the system, turn system power off and then back on, to prepare for Startup programming.)

1. Press [Feature] [*] [*] [S] [T] [A] [R] [T] [U] [P]
   (or [Feature] [*] [*] [7] [8] [2] [7] [8] [8] [7]).
   The display reads Password:.

   You will have to use the default if this is the first time that Configuration programming has been accessed.
   If Startup must be performed on an existing system which has already been programmed, the Installer password might have been changed. The change should have been recorded in the *3X8 DR5.1 Programming Record*.

2. Enter the Installer password. The default password is [C] [O] [N] [F] [I] [G] (or [2] [6] [6] [3] [4] [4]).

Choosing the system template

System Startup is used during initial installation to choose the appropriate template before starting programming. There are three templates available:

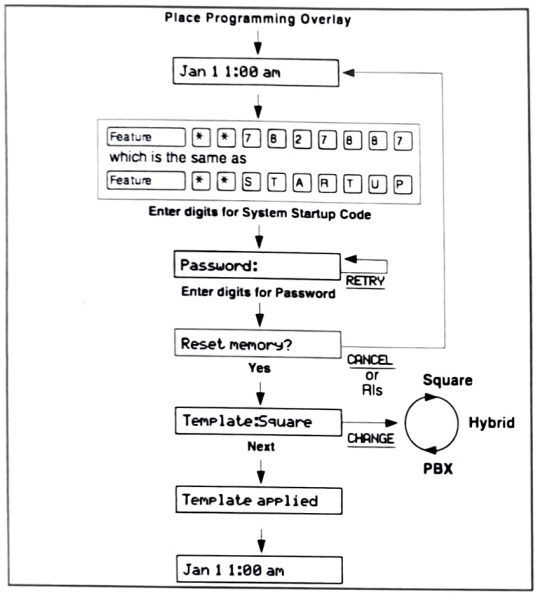
Square: Line 01 and Line 02 are assigned to each telephone.

Hybrid: Each telephone has access to Line Pool A and is assigned Line 01.

PBX: Each telephone has access to Line Pool A, but does not have a line assigned.

1. The display reads Reset memory?. To continue with System Startup and choose the system template, press YES.
   OR
   Press CANCEL to exit without resetting system memory.
2. The display shows Template:Square. To accept the Square template, go to step 3.
   OR
   To select another template, press CHANGE to select another template.
3. To accept the template shown and exit from System Startup, press [Next]. System Startup is complete when the default time and date appear on the telephone display.

Chart 4 — System Startup



Configuration

A.Configuration programming allows you to specify basic system characteristics for the customer site. Configuration is not accessible through Administration programming.

Headings and subheadings in Configuration programming help you to keep track of where you are.

A. Configuration	
1. Trk/Line Data	lets you assign settings to each line.
2. Line Access	lets you assign settings to each telephone.
3. Call Handling	lets you assign system-wide settings associated with various call features.
4. Miscellaneous	lets you assign various system-wide settings.
5. System Data	lets you change a telephone's internal number, the length of all internal numbers, and the number of digits received by auto-answer trunks.

Entering Configuration

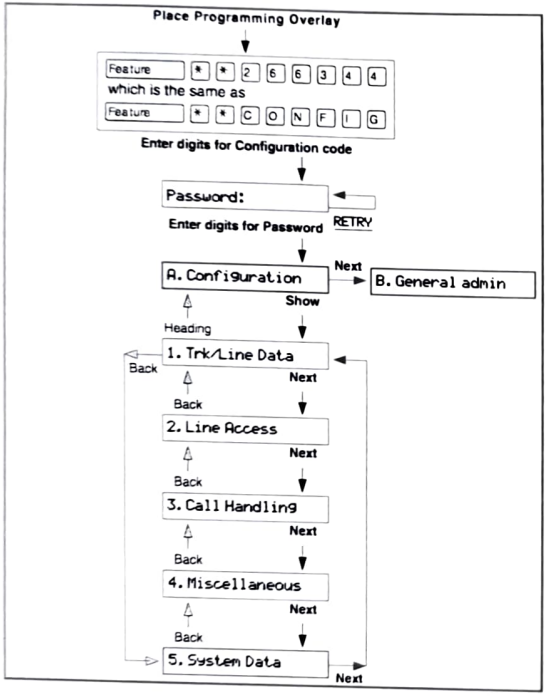
1. Press Feature * * C O N F I G or (Feature * * 2 6 6 3 4 4). The display reads Password:.
2. Enter the Installer password. The default password is C O N F I G (or 2 6 6 3 4 4). The display reads A. Configuration. Three triangular indicators ▶ appear on the vertical display between the rows of buttons.
3. Place the programming overlay over the buttons pointed to by the indicators ▶.

Exiting Configuration

Norstar stores your changes automatically as soon as you alter any settings; you do not need to "save" your changes.

1. Press Rls to exit. The display reads `End of session`.

Chart 5 — Configuration Overview



Trk/Line Data

Use `1. Trk/Line Data` to program characteristics for each external line.

When you are finished programming the Trk/Line Data settings for a line, you may copy those exact settings to another line by using the COPY display button at the `Show line:` prompt.

Entering the line to be programmed

Enter any available line number between 01 and 03.

Trunk data

Trunk data settings apply to external lines and include Trunk mode, Dial mode and Full Autohold.

Trunk mode

Trunk mode lets you specify one of two modes of operation for each line: disconnect supervised or unsupervised. The possible settings are Super or Unspr. Super turns disconnect supervision on for the line. Unspr turns disconnect supervision off for the line. The default is **Unspr**.

Disconnect Supervision, also referred to as loop supervision, releases an external line when an Open Switch Interval (OSI) is detected during a call on that line. This prevents the line from remaining unavailable for other Norstar users.

You should only assign the supervised mode to CO lines that provide an Open Switch Interval (OSI) message. The use of lines that do not have the OSI feature available (or lines set as unsupervised) for incoming calls, results in the inconsistent operation of the Line Redirection feature, the ability to disconnect from a conference that involves two external callers, and the ability to transfer an incoming external call to an external number.

The duration of an OSI before Norstar disconnects a call is programmed in the Disconnect Supervision delay setting of Miscellaneous programming.

Dial mode

A dial mode can be assigned to each line. The mode defines the signaling that the line will use. The default mode is **Pulse**. The other possible mode is Tone.

Lines that use Dual Tone Multi Frequency (DTMF) tones, should be set to Tone.

Full Autohold

If you select an idle line, but do not dial any digits, that line is automatically placed on hold if you then select another line. The default setting is **No**, which means that the line is not held. The other possible setting is Yes.

Line data

Line data settings apply to external lines and include Line type, Prime telephone, Auxiliary ringer and Auto privacy.

Line type

A type can be assigned to each line. The type defines how the line is to be used in relation to other lines in the system. The default type is **Public**. Other possible types are Private, Pool A, Pool B and Pool C.

- If you define a line as Public, the line can be accessed by more than one telephone.
- If you define a line as Private, the line can only be assigned to one telephone and the Prime Telephone for that line.
- If you assign a line to a Line Pool, that line can be available to any telephone that is assigned access to that Line Pool.
- If a line is assigned to one of the three Line Pools, but the line is not assigned to any telephone, that line can only be used for making outgoing calls.

- If a line is assigned to one of the three Line Pools, you must remember that there are still two more programming settings that must be assigned before a Line Pool can be used:
  - — You must assign Line Pool Access to telephones in Line Access.
  - — You must assign Line Pool access codes in Miscellaneous programming.

Prime telephone

The Prime telephone provides backup answering for the selected line. The default Prime telephone has the internal number **21**. Other possible settings are any allowable internal numbers, or None.

- Each line can only have one Prime telephone.
- Any Prime telephone can be assigned to provide backup answering for more than one external line. All of these lines do not necessarily have to appear on a line button with an indicator; however, monitoring lines is made easier if there is a line button for every external line.

Auxiliary ringer

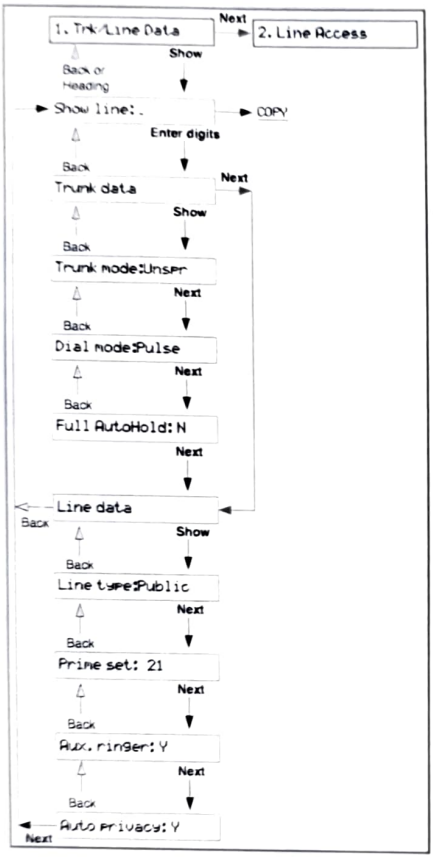
An auxiliary ringer can be enabled or disabled for calls coming in on the line. The default setting is **Yes**, which means that the ringer will ring. The other possible setting is No.

The telephone auxiliary ringer setting when combined with the line auxiliary ringer setting allows you to chose if the Auxiliary Ringer (if installed) will ring when a call is sent to a specific telephone or on a specific line. For example, an incoming call on a line programmed to yes will ring the auxiliary ringer. Once the call is answered and transferred within the system, the auxiliary ringer will not ring for a call sent to a telephone that has auxiliary ringer set to no.

Auto privacy

Select **Yes** (the default) to prevent other users who have access to a line on their telephone from using that line while a call is already in progress on the line. Select No, to allow a user to select a line in use at another telephone, and join an established call.

Chart 6 — Trk/Line Data



Line Access

Use **2. Line Access** to program characteristics for each telephone. These characteristics establish which lines the telephone may use.

When you are finished programming the Line Access settings for a telephone, you may copy those exact settings to another line by using the COPY display button at the **Show set:.** prompt.

Entering the telephone to be programmed

Enter any available DN. Default DNs range from 21 to 28. DNs can be later changed to a new number in **5. System Data** of Configuration programming.

Note: Settings are automatically applied for the Analog Terminal Adapter (ATA) if installed. See the *ATA Installation Guide* for the defaults.

Line assignment

Add or remove lines to assign one or more lines to each telephone. The default line assignments to each telephone are **Line 01** and **Line 02**.

- A Private line can only be assigned to one telephone. (It is also automatically assigned to the Prime Telephone for that line.)
- If you assigned the PBX template in System Startup, a Line Pool is assigned to the telephone instead of external lines. You can add lines if you wish. This would allow the telephone to ring for incoming external calls.
- If a line is assigned to a Line Pool, but is not assigned to any telephone, that line can only be used to make outgoing calls.

Answer DNs

Up to four buttons on a telephone can be programmed for answering calls to the DNs of other telephones. The default is **No Answer DNs**.

Ringing

For each line and Answer DN assigned to a telephone, you can determine whether incoming calls will ring at the telephone. Possible settings are Ring and No Ring. The default setting is **Ring**.

Line pool access

You can determine which Line Pool each telephone has access to. Possible settings are Yes and No. The default setting is **No** for each of the three line pools, which means no telephone has default access to Line pools.

Assigning a Line Pool to a telephone saves on the number of buttons required for external lines on the telephone.

Intercom buttons

You can determine the number of Intercom buttons on the telephone. Possible settings are 0, 1, or 2. The default setting is **2**.

A minimum of two Intercom buttons are required for conferencing with two other Norstar telephones in the same system.

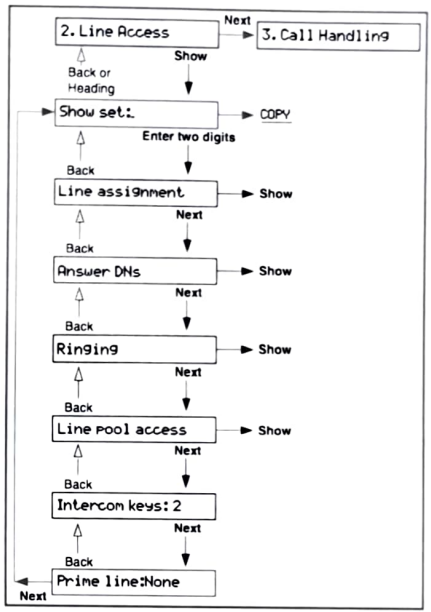
A minimum of one Intercom button is required if internal calls are to be made or received from the telephone or Line Pools are to be accessed from the telephone.

Prime line

You can assign the Prime line for each telephone. The Prime line is the first line to be automatically provided at a telephone when you make a call. The appropriate Prime line will depend on the customer's requirements. The default setting is **None**, which means that no Prime line is assigned to the telephone. Other possible settings are an external line (Line number), Line Pool A, Line Pool B, Line Pool C or intercom (I/C).

A Prime line is not related to the operation of a Prime telephone.

Chart 7 — Line Access



Call Handling

Use 3. Call Handling parameters to program system-wide characteristics for certain call features. These characteristics are not associated in programming with any particular line or telephone.

Held reminder

Choose if the Held Line Reminder feature is to be active for all external lines. Possible settings are Yes and No. The default setting is **No**. If Yes, the programming menu takes you to the Remind delay setting.

Remind delay

Assign the delay (in seconds) before the Held Line Reminder feature begins at the telephone which has put an external line on hold. Possible delays are 30, 60, 90, 120, 150 and 180 seconds. The default delay is **60** seconds.

This setting does not appear if Held Line Reminder is not active.

DRT to prime

Choose if the Delayed Ring Transfer to Prime telephone feature is to be active for all external lines associated with the Prime telephone. Possible settings are Yes and No. The default setting is **Yes**. If Yes, the programming menu takes you to the DRT delay setting.

Ensure that you have an operational Prime telephone. This setting applies only to external lines with an assigned Prime telephone.

DRT delay

Assign the delay (number of rings) before an unanswered external call is redirected to the Prime telephone. Possible delays are 1, 2, 3, 4, 6 or 10 rings. The default delay is **3** rings.

To estimate the delay time in seconds, multiply the number of rings by six. This setting does not appear if DRT to prime is not active.

Transfer callback

Choose the delay (number of rings) before a transferred external call will callback to the originating telephone. The possible delay is 3, 4, 5, 6, or 12 rings. The default delay is **3** rings.

To estimate the delay time in seconds, multiply the number of rings by six.

Park prefix

Park prefix assigns a one digit code to retrieve a parked call. Any valid digit from 0 to 9, or None, can be assigned. The default Call Park prefix is **1**. The Call Park prefix cannot be the same as the first digit of an internal DN, the first digit of a Line Pool access code, the Direct-Dial digit, or the External Line access code.

Park timeout

Assign the number of seconds before a parked external call will callback to the originating telephone. The possible timeout is 30, 45, 60, 90, 120, 150, 180, 300, or 600 seconds. The default timeout is **45** seconds.

Camp timeout

Assign the length of delay before a camped call is returned to the telephone which camped the call. The possible timeout is 30, 45, 60, 90, 120, 150, or 180 seconds. The default timeout is **45** seconds.

Directed pickup

Select **Yes** (the default) to allow any telephone within the system to answer calls by specifying the ringing telephone's number (unlike Call Pickup Group which only allows pickup of calls within a specified group of telephones). The other possible setting is No.

On hold

Choose what a caller will hear on an external line when the line has been put on hold. Possible settings are Tones, Music, or Silence. The default setting is **Tones**.

A customer supplied music source must be connected in order to hear music.

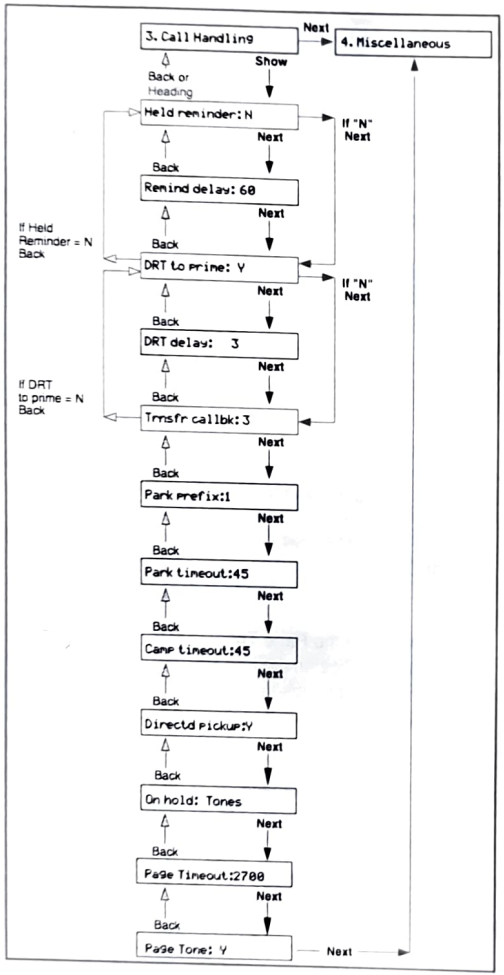
Page Tone

It is possible to turn the Page Tone off for all users. This is convenient if the office environment is often busy with Page Announcements. To choose whether a tone sounds before a page begins, press CHANGE to select the setting: **Y** (Yes) or N (No).

Page Timeout

The paging feature is automatically disconnected after a set length of time. Press CHANGE to select the maximum number of seconds needed for a page: 15, 30, 60, 120, 180, **300**, **2700**.

Chart 8 — Call Handling



Miscellaneous

Use 4.Miscellaneous settings to program various system-wide characteristics. These characteristics are not associated in programming with any particular line or telephone.

Background Music

Choose if the Background music feature is to be available with the Norstar system. Possible settings are Yes and No. The default setting is **No**.

If this feature is enabled, ensure that an external music source has been connected to the KSU. (This music source is also used for the Music on Hold feature.)

Direct-Dial digit

Choose the digit you dial in order to get the Direct-Dial Telephone to ring. The possible settings are any valid digit from 0 to 9, or None. The default setting is the digit **zero**. The Direct-Dial digit cannot be the same as the first digit of an internal DN, the first digit of a Line Pool access code, the External Line access code, or the Call Park prefix.

Link time

Assign the Link time (in milliseconds). Possible times are 100, 200, 300, 400, 500, 600, 700, **800**, 900, 1000 milliseconds. The default Link time is **600** milliseconds.

The Link time depends on the requirements of the host PBX, Centrex, or other switching system that must be accessed by Norstar. Link is another name for Recall or Flash.

Telephone relocation

Choose if the Set Relocation feature is to be active. Possible settings are Yes and No. The default setting is **No**.

It is advisable to turn Set Relocation on after the telephone installation and programming has been done. This provides you with more flexibility in testing equipment. If this feature is disabled, and a telephone is moved, that telephone's internal number and Administration data remain with the physical port.

If new telephones are being installed at the same time that other telephones are being relocated, you should perform the following procedure to ensure that Set Relocation occurs:

1. Select Yes to turn on Set Relocation.
2. Unplug the telephone that is to be relocated.
3. Plug the telephone into its new location.
4. Plug a new telephone into the old location of the telephone that was moved.

When you relocate a Norstar telephone, the telephone must remain installed and connected in the new location until the system recognizes the telephone at the new location. This could take as little as one minute or 15 minutes for a busy system. Moving the telephone again before the system recognizes the new location may result in losing the telephone's programming.

Host delay

Host delay programs the delay in milliseconds between the selection of an outgoing line and the moment that Norstar sends dialed digits or codes on that line. Possible delays are 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800 or 2000 milliseconds. The default is **1000** milliseconds.

Disconnect Supervision delay

Disconnect Supervision delay allows you to specify the duration of an Open Switch Interval (OSI) before the Disconnect (or loop) Supervision feature disconnects a call on a supervised external line. Possible settings are 60, 100, 260, 460, or 600 milliseconds. The default is **460**.

Disconnect Supervision is assigned to each line with the Trunk mode setting in the Trunk data section of Configuration programming.

External code

The External code allows an M7100 Telephone or an ATA to access external lines. Any valid digit from 0 to 9, or none, can be assigned. The default is **9**. The External Line access code cannot be the same

as the Call Park prefix, the Direct-Dial digit, the first digit of a Line Pool access code, or the first digit of an internal DN.

Line pool codes

Line Pool access codes are used to specify the line pool you wish to use for making an outgoing external call. Assign Line Pool access codes for each of the three possible Line Pools. The possible settings are a one to four digit number or None. The default setting is **None**.

A Line Pool access code cannot start with the first digit of an internal DN, the Direct-Dial digit, or the Call Park prefix.

A Line Pool access code takes precedence over the External Line access code if there is a conflict.

Line Pool access codes starting with the same number must be the same length.

Ensure that the person administering the system knows the codes.

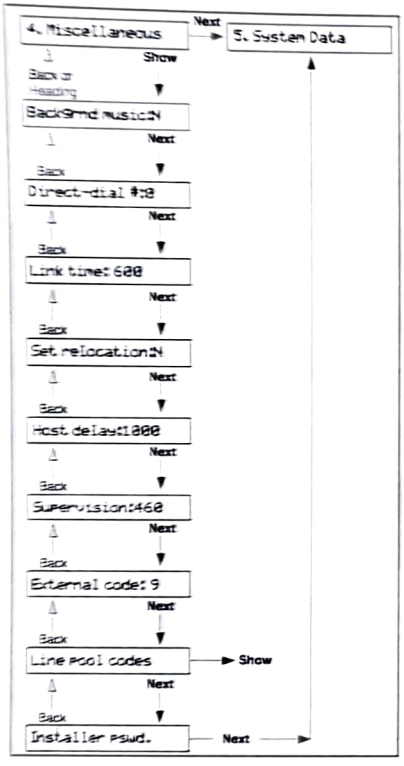
Installer password

This allows you to change the Installer password for access to Configuration programming. The possible setting is any combination of one to six digits.

The default Installer password is [2] [6] [6] [3] [4] [4] which is the same as [C] [O] [N] [F] [I] [G].

The default password is required to first gain access to Configuration programming. However, it is advisable to change that password to a new one. Remember to record the new Installer password in the *3X8 DR5.1 Programming Record*. It is easier to remember the password if the digits spell a word.

Chart 9 — Miscellaneous



System Data

Use 5. System Data to change the internal number or Directory Number (DN) of an individual telephone.

Note: Do not attempt internal number changes within two minutes of System Startup or you may disable the ports.

Individual DNs

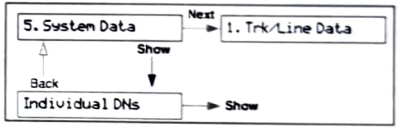
Enter the appropriate internal number when you are prompted for the old and the new internal number. A message will appear on the display if either internal number is invalid. The possible settings are any valid internal number between 20 and 99. The default internal numbers for telephones range from **21** to **28**.

No internal number changes occur until the Configuration session ends. (Press the Rls button.)

There can be only one telephone for each internal number. If the "new internal number" already existed for another telephone, that telephone will be given the "old internal number".

The first digit of an internal number cannot be the same as the External Line access code, the Direct-Dial digit, the Call Park prefix, or the first digit of a Line Pool access code.

Chart 10 — System Data



Note: If you change a DN, you cannot continue programming in any of the other sections while in the same Configuration session. Press the Rls button to end the session

Set Copy

Use C. Set copy for copying programmed data from one telephone to another. You can copy System data only or you can copy both System data and Personal programming (User data). System data is programmed in Configuration and Administration. Personal programming is performed by the user at the individual telephone, and allows the telephone to be customized according to the user's requirements.

Set Copy Options

```
Copy:SYSTEM data
```

When this message appears on the display, you can choose to copy System data pertaining specifically to telephones.

```
Copy:SYSTEM+USER
```

When this message appears on the display, you can choose to copy System data and Personal programming. Both telephones must be the same model and connected to the system before this option can be used.

Note: Do not confuse C. Set copy with the COPY display button (or [CoPy] on the M7208 Telephone), which is for selective copying of specific groups of settings from one telephone or external line to another.

Telephone settings which CANNOT be copied

System settings in Configuration programming

1. Trk/line Data

— Private line appearances

— Prime telephone designation for a line

5. System Data

— Directory Number (DN)

System settings in Administration programming

2. Names

— Telephone name

4. Direct-Dial

— Direct-Dial telephone designation

6. Service Modes

— Extra-Dial telephone designation

— Control telephone designation for a line

— Service mode Ringing telephone designation for a line

9. Call Services

— Auto Call Info telephone designation for a line

— Log space

Personal programming

— Autobump

— Autolog options

— Contrast Adjustment

— Dialing modes (Automatic Dial, Pre-Dial, Standard Dial)

— Log password

— Ring Type

— Ring Volume

Telephone settings which CAN be copied

Listed below are the telephone related settings which can be copied to a destination telephone, overriding any previous programming.

System settings in Configuration programming

2. Line Access

- Line assignment
- Answer DNs
- Ringing line preference
- Line pool access
- Number of Intercom buttons
- Prime line designation

System settings in Administration programming

5. Capabilities

- Set Filter
- Line/set filters
- Set Lock
- Full handsfree
- Auto handsfree
- Handsfree answerback
- Pickup group
- Paging
- Page zone
- Auxiliary ringer
- Direct-Dial
- Forward on busy
- Forward on no answer
- Forward no answer delay
- Allow redirect

- Redirect ring
- Receive tones
- Hotline
- Priority call

9. Call Services

- Logging set designation
- Show external Voice Message
- First display

Personal programming

If desired, the following Personal settings can be copied along with the System data:

- Programmable button assignments (Internal Autodial, External Autodial, and feature access)
- Language choice
- Personal Speed Dial entries

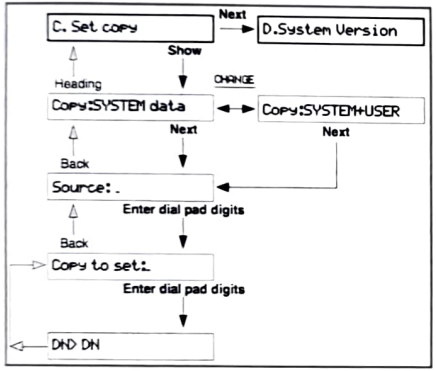
Entering Set Copy

You can only enter Set Copy through Configuration programming with the Installer password.

After A. Configuration appears on the display:

1. Press [Next] twice. The display shows C. Set copy.
2. Press [Show] to go to Copy:SYSTEM data.

Chart 11 — Set Copy



System Version

System Processor (SP) version numbers can be used to determine whether you have the latest software release, and to trace a software fault if one occurs. For instance:

— SP and telephone version numbers can indicate a telephone version incompatibility.

— SP and functional terminal version numbers can indicate a functional terminal incompatibility.

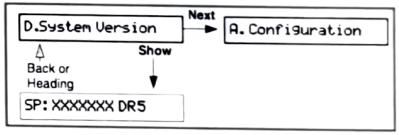
Entering System Version

You can only enter System Version through Configuration programming with the Installer password.

After A. Configuration appears on the display:

1. Press [Next] three times. The display shows D.System Version.
2. Press [Show]. The display shows the version number of the SP.

Chart 12 — System Version



Troubleshooting

Only qualified persons should service system.

Only qualified personnel are to replace components and service hardware.

Testing the lines and telephones

1. Check all external lines by selecting each line in turn at one of the telephones and verifying the dial tone. If you do not get dial tone, plug a single-line telephone directly into the external line at the distribution panel. If you still do not get dial tone, check all your wiring or contact your telephone company.
2. Check all internal connections by calling each Norstar telephone from another Norstar telephone.
3. Check the quality and clarity of all connections. Check for crackling, static, hums, or any other unusual noise.
4. If there are any problems, refer to other procedures in this chapter.
5. Verify the visual indicators:
   - Select a line or Intercom button. The ▶ indicator beside that button should appear.
   - Press Feature * 0.
   - The display should show `Button Inquiry` followed by `Press a button.`
   - Press the Rls button to exit from this feature.

Analog Terminal Adapter (ATA) trouble

1. Check the single-line telephone connection by using a telephone.
2. Check the connections to the jack.
3. Check the connections to the ATA.

4. Disconnect the ATA and replace it with a working Norstar telephone. If the telephone works properly, this verifies that the KSU is working properly.
5. Verify that programming has been done as described in the *Norstar Analog Terminal Adapter Installation Card*.
6. If the trouble seems to be in the KSU, double check all wiring and programming options. If this does not help, refer to "KSU down" on page 60.

Class 2 power source.

This unit must be powered from a Class 2 power source that is UL listed and CSA certified.

Auxiliary Ringer trouble

1. If the Auxiliary Ringer is used for Service Modes, ensure that Service Modes is activated from the Control Telephone.
2. Check the wiring between the Auxiliary Ringer generator and the ringing device. (See Chart 2 — Internal Wiring.)
3. Check the wiring between the Auxiliary Ringer and the distribution panel.
4. Check the Auxiliary Ringer contact operation with an ohmmeter across the pins.
5. Check that the Auxiliary Ringer is programmed to ring for any of the following programmable settings:

Feature	Programmed in:
Aux. Ringer for a specific line	A. Configuration (1. Trk/Line Data)
Aux. Ringer for a specific telephone	B. General admin (5. Capabilities)
Aux. Ringer for a specific tService Mode	B. General admin (6. Service Modes)

Dial tone absent (on external lines)

1. Use Button Inquiry ([Feature] [*] [0]) to check the programming of a memory button that you think is assigned as an external line.
2. Check for dial tone by using a single-line telephone at the connections for the external line on the distribution block.
3. Check the connections between the KSU and the distribution block.

External Paging trouble

1. Ensure that you are using the proper feature code ([Feature] [6] [2]).
2. Check the wiring between the 50-pin connector and the paging amplifier.
3. Check the wiring between the connections. (See Chart 2 — Internal Wiring.)
4. Check that the paging equipment is operational and that the output from the Norstar KSU is 775 mVrms across 600 Ω.

Hung lines at a telephone

Line indicators that have been solid for a long time are the only visible indication that lines are hung.

A line that has been redirected using Line Redirection may, under some circumstances, remain busy after a call is over. If this happens, the outgoing line for the redirection also remains busy. You can clear this kind of hung line only at the telephone that was used to redirect the line.

1. Select Button Inquiry ([Feature] [*] [0]) at the telephone that was used to redirect the line.
2. Press the button of the redirected line.
3. Press SHOW or [#].
4. Press DROP or [*].

Both the redirected line and the outgoing line for the redirection should now be cleared.

KSU down

1. Check that the ac power cord is properly connected to a working outlet.
2. If ac power is present and the LED indicator on the KSU is off, verify that there is power at the dc end of the power supply.
3. If there is power at the dc end of the power supply, replace the KSU.
   OR
   If there is no power at the dc end of the power supply, replace the power supply.

Music on Hold/Background Music trouble

1. Ensure that the volume control (Feature * 8 0) is turned up and you are using the Background Music feature code (Feature 8 6).
2. Check the applicable Configuration programming settings to ensure that the feature is enabled:

Feature	Programmed in:
Music on Hold	3. Call Handling
Background Music	4. Miscellaneous

3. Check the wiring between the music source and the 50-pin connector.
4. Check the polarity of the connections between the music source and the distribution block.
5. Ensure that the music source is turned on, is operational, and has the volume control properly adjusted.

Telephone dead

1. Check for dial tone.
2. Check the receiver cord connection.
3. Check the display. If the display is unreadable, ensure that the display contrast adjustment (Feature * 7) is appropriate.

4. Check the internal wiring at both the modular jack and the distribution block.
5. Check the internal line.
6. If the problem persists, replace the telephone with a known working Norstar telephone.

Note: An internal line should have between 15 and 20 Vdc across the Tip and Ring when the telephone is disconnected.

Finishing up

If you are required to perform Administration programming, refer to the *3X8 DR5.1 Owner's Handbook*.

If you are not required to continue programming, give the *3X8 DR5.1 Programming Record* to the person who will administer the system.

Applying the button labels

If you perform all of the programming for a system, apply the appropriate button labels on the telephones. Before you apply button labels, activate the Button Inquiry feature (Feature * 0) to avoid activating features as you put the labels onto the buttons.

For the customer

Remember to leave the following items at the installation site:

For the person administering the system

- *3X8 DR5.1 Owner's Handbook* (with the Programming Overlays)
- *3X8 DR5.1 Programming Record*
- Optional equipment User Cards (for example, the BLF and ATA)
- Spare button labels and button caps
- Telephone User Cards (for the M7100, M7208, M7310, and M7324 as required)
- *3X8 DR5.1 Telephone Feature cards*

In the booklet tabs of the KSU

- *3X8 DR5.1 Installation Guide* (with the Programming Overlays)
- Optional equipment Installation Cards (for example, the BLF and ATA)

Personal programming

Information on telephone feature programming and operation can be found in the *3X8 DR5.1 Owner's Handbook*.

Call Display services

Your Norstar system can access information contained in Call Display services offered by your public telephone company, and uses that information to provide additional messaging tools to the Norstar user.

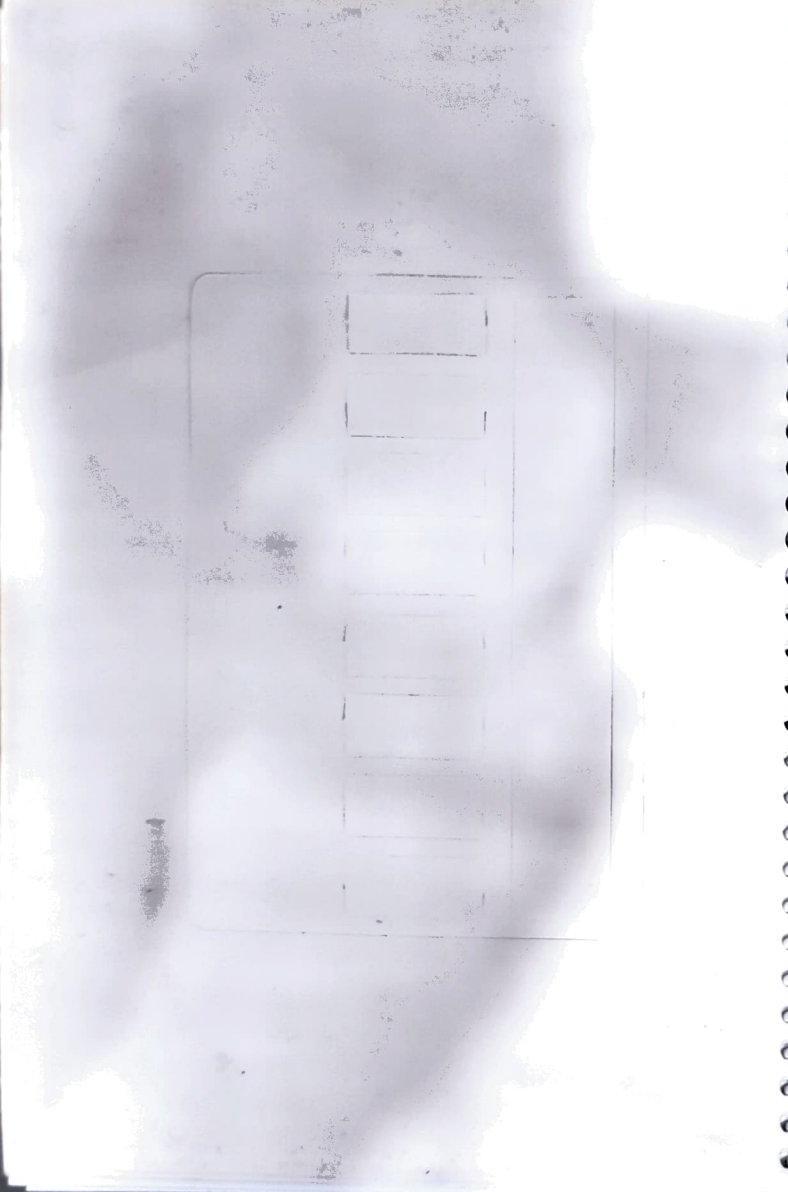
Note: You can access Call Display information only if you subscribe to the services. Contact your Customer Service representative for more information.

Call Display information may be shown on your telephone display when a call is alerting, identifying the caller to you. Specific telephones are programmed to receive this information in Administration programming. For more information see the Call Information section in the Programming chapter of the *3X8 DR5.1 Owner's Handbook*.

After you have finished programming, store your Norstar Programming Overlay in the slots provided on the back cover.

Après avoir terminé la programmation, rangez la grille Norstar dans les fentes prévues à cet effet à la fin de ce guide.

Cuando haya terminado de programar, inserte en estas ranuras su Plantilla de programación Norstar que se encuentra en la contra tapa.



Norstar Programming Overlay

Heading

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